

On the True Nature of "*Möbiusispongia parasitica*," Duncan.
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IN the Journal of the Royal Microscopical Society for June 1880, the late Professor Martin Duncan described an organism which he regarded as "a parasitic sponge of the order Calcarea," and which he named *Möbiusispongia parasitica*.

The reasons given for classing the specimen with the Sponges were decidedly inadequate, and writers of monographs on the group have been content to insert the name among doubtful and insufficiently characterized forms. It has become one of those names which reappear in lists compiled by specialists, always followed by a note of interrogation, until some later observation supersedes them.

As I have been able to examine the original specimen, and believe the appearances necessitate a very different explanation, I thought it would be of interest to exhibit the preparation to the Society: not only to relieve the students of Sponges of a doubtful genus, but because the form has also a distinct interest for those who are working at the Protozoa.

Dr. Duncan found the organism in some sections of *Carpenteria raphidodendron*, Möb., from Mauritius, which had been lent him by the late Dr. W. B. Carpenter.

It consists of a series of delicate calcareous sacs or chambers connected by straight stolon-tubes, lying within one of the chambers of the *Carpenteria*. Some of the stolon-tubes pass through the partition-wall of the *Carpenteria* and communicate with sacs lying in the adjacent chamber. The wall both of the sacs and tubes is a thin calcareous shell traversed by well-marked perforations and bearing short pointed spines on the exterior. The group of sacs in the chamber of the *Carpenteria* measures about a fiftieth of an inch in length by a hundredth in breadth, while some detached sacs may be found in other parts of the slide.

In 1891 the late Dr. P. H. Carpenter lent me some slides of *Carpenteria* for examination, and in the course of my study of

one of them I met with the organism under consideration. At that time I had not seen Dr. Duncan's paper, or heard of *Möbiusi-spongia*; but I made a note and drawing of the object as a Foraminifer of the genus *Ramulina*. A year or so later, when working at sponges, and anxious to know about "*Möbiusi-spongia*," I referred to Dr. Duncan's paper and found it was the specimen I had drawn as a *Ramulina*.

I have no doubt that my determination is correct, and I believe that any student of the group would recognize its foraminiferous character from the original illustration.

It only remains to examine the evidence on which the organism was referred to the Sponges, and to determine, if possible, the species of Foraminifera to which it belongs.

Dr. Duncan based his conclusions, first, on the presence of "a cellular element," and secondly, on the occurrence of spicules.

The faint lines seen in places round the projecting spines are, however, only such as are frequently observed in the shells of Foraminifera, forming a sort of areolation due either to incipient cracking or to the mode of deposit of the shell-material. There is *no* trace of true cellular structure.

The spicules observed are two or three broken needles and one triradiate. All would be far too large in proportion if the body were a Sponge, and none have any actual connexion with the walls of the chambers and tubes, as was admitted in the original description. They are evidently entirely accidental.

We may therefore, I consider, safely dismiss the claims of this curious organism to rank with the Sponges, and the only question is whether it can be included in any of the known species of *Ramulina*.

The genus *Ramulina* was originally founded by Mr. Wright* for certain fossil fragments from the Chalk. Professor Rupert Jones † subsequently placed the genus on a more definite footing; and Mr. Brady ‡ adopted it for certain recent forms found in the North Atlantic and South Pacific during the 'Challenger'

* "Cretaceous Microzoa of the North of Ireland," Report and Proceedings of the Belfast Nat. Field Club, 1873-4.

† In the same publication for 1875; and in the 'Micrographic Dictionary,' 1875.

‡ H. B. Brady, 'Journal of the Microscopical Society,' n. s. xix. p. 272; and 'Challenger Report,' vol. x.

cruise. The fossil forms have been apparently confused in some cases with the *Dentalina aculeata* of D'Orbigny, and need careful revision.

Recent forms have been so far included in *R. globulifera*, Brady, which measure about a fifteenth of an inch (1.7 millim.) or more in length.

The specimen found in the chamber of *Carpenteria* differs therefore from the type in its smaller size as well as in the more sinuous and irregular shape of the chambers, but the difference seems scarcely sufficient to justify a separate specific name.

Very probably the organism was "*Polymorphine*" in its early stages like the *Ramulina Grimaldii* described by M. Schlumberger* as growing among other organisms on dead shells. Future research will doubtless reveal the existence of several species of such adherent types, and the chambers and tubes to which the name *Ramulina* was first given may be only their detached fragments.

In this case the animal in its young stage was probably surrounded by the rapidly growing *Carpenteria*, but managed to live for some time by means of the water circulating through the chamber of the larger Foraminifer. That its growth under such circumstances would be limited is very natural, and its characteristics may be regarded as due to abnormal conditions rather than to specific distinctness.

It is not likely that the *Ramulina* grew in the chamber of the *Carpenteria* after the death of the latter, as the chambers are still lined with dry sarcode while those of the *Ramulina* are empty. It is also difficult to suppose that a *Ramulina* could perforate the dead walls of a *Carpenteria* and extend its stolon-tubes into adjacent cavities.

On the other hand, if both organisms were living at the same time, either the *Ramulina* must have obtained food by taking it direct from the *Carpenteria*, or more probably the protoplasm of the latter in the living state only lines the chambers, leaving a clear space in the centre through which water can circulate.

* Mém. Soc. Zool. France, iv. (1891), p. 509. My thanks are due to M. Schlumberger for a copy of the plate illustrating his description.